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Study the Comparative efficacy of *Nagakeshara* (*Mesuaferrea* Linn.) and its substitute, *Surapunnaga* (*Ochrocarpuslongifolius* Benth. and Hook) in management of internal haemorrhoid

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ABSTRACT

Introduction: *Nagakeshara* (*Mesuaferrea* Linn.) is medium-sized to the large evergreen tree of family Guttiferae. (Syn. Clusiaceae). It is one of the contents of *Chaturjata* and widely used in many formulations meant for treating *raktarsha* (bleeding piles), *adhoga-rakta pitta*, etc. It reduces the swelling and pain, shrinks the piles and restricts the bleeding. *Surapunnaga* (*Ochrocarpuslongifolius* Benth. and Hook.) also belongs to family Guttiferae which is commonly distributed in Western Ghats of Konkan, Northern Kanara, Malabar and Coimbatore. The flower buds are also called as *Lal Nagakesara* and sold in the market as *Nagakeshara*. This is fragrant, analgesic, very useful in blood diseases such as leucorrhoea, menorrhagia and for controlling bleeding in piles. It also acts as antispasmodic and diuretic.

Aim and Objective: Due to scarcity and unavailability of *Nagakeshara* and lack of awareness, fresh stamens and buds of other plants are used instead of *Nagakeshara* stamens. In Gujarat, Maharashtra and most parts of North India, *Surapunnaga* is considered as *Nagakeshara* and sold in the market with name 'Lal (red)/Ratan Nagakeshara'. Therefore identify and authenticate sample of *Nagakeshara* (*Mesuaferrea* Linn.) and *Surapunnaga* is important. In the present study, *Lal Nagakeshara* (*O. longifolius*) was compared with *Nagakeshara* (*M. ferrea*) for its effect on internal haemorrhoids.

Method: For this 60 clinically diagnosed patients of internal haemorrhoid were selected and randomly divided into two groups by simple random sampling method. 30 patients were enrolled in each group.

Conclusion: The symptoms were relieved in less duration in *Nagakeshara* as compared to *Surapunnaga*. Hence it is concluded that powder of stamens of *Nagakeshara* with proper *Anupama* is more effective than powder buds of *Surapunnaga*.

Key Words: Nagakeshara, Mesuaferrea, Surapunnaga, Ochrocarpuslongifolius, Lal Nagakesara, Raktarsha

INTRODUCTION

Mesuaferrea Linn. of family Clusiaceae(Guttiferae)is a handsome Indian evergreen tree often planted as an ornamental for its fragrant and attractive white flowers that yield a perfume. It is medium-sized to the large evergreen national tree of Srilanka. It is distributed in mountains of Himalaya from Nepal Eastwards, North Eastern India, Deccan Peninsula and the Andaman Islands. The useful parts are fruit, seed, flowers, buds, leaves and bark. It is widely used in various Ayurvedic formulations meant for treating *raktarsha* (bleeding piles) also indicated in *adhoga-rakta pitta*, *trusha*, *jvara*,

tvakaroga, *visha*, etc. It is one of the contents of *Chaturjata* and widely used in many formulations.¹⁻⁴

Ochrocarpuslongifolius Benth. and Hook (*Surapunnaga*) also belongs to family Guttiferae. The useful part is dried floral bud, which is commonly distributed in the Western Ghats of the Konkan, Northern Kanara, Malabar and Coimbatore and cultivated in the Northern Circars. The buds flowers are also called as *lalnagakesara* which are fragrant, sweet, cooling, analgesic, stomachic, aphrodisiac; pacifies *kapha*, dispel biliaryness; good in blood diseases, leprosy etc. It is a tonic for heart, antispasmodic and diuretic.⁵ It exhibits significant anti-inflammatory and styptic activity.

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These buds are mainly used in leucorrhoea, menorrhagia and for controlling bleeding in piles.^{6,7,8}

Haemorrhoid is one of the most common gastrointestinal disorders. It has been observed that they can occur at any age and can affect both men and women. The natural evolution of haemorrhoid is benign, but they tend to get worse over time and therefore they should be treated. Treatment options vary based on the degree and severity of symptoms.⁹ *Nagakeshara* is mostly indicated in bleeding Piles, menorrhagia, metrorrhagia and epistaxis because it pacifies the *pitta*. *Nagakeshara* reduces the swelling and shrinks the piles, reducing the pain and restrict the bleeding.

Every medicinal plant exhibits different therapeutic value due to the presence of different phytochemical properties. As there are scarcity and unavailability of *Nagakeshara*, also due to lack of awareness, instead of *Nagakeshara* stamens, fresh flowers stamens and buds of other plants are used as a substitute to treat bleeding piles. In market *Surapunnagai*e. *Ochrocarpuslongifolius* Benth and Hook. are sold as *Nagakeshara*. In a previous survey study conducted in 8 different markets, it can be observed that genuine *Nagakeshara* is *Mesuaferrea* Linn. which is available in the name of 'yellow *Nagakeshara*' or 'flower of *Nagakeshara*'.¹⁰⁻¹² In Gujarat, Maharashtra and most parts of North India, *Ochrocarpuslongifolius* Benth and Hook. is considered as *Nagakeshara* and sold in the market with the name 'lal (red) /Ratan *Nagakeshara*'.¹³ Now, the trend is moving towards integration of traditional medicines into the modern healthcare system which is a good sign of development as it ultimately attempts the goal of purity in help in the improvement traditional medicine. Out of that, we have selected lal *Nagakeshara* (buds of *Ochrocarpuslongifolius*) used as a substitute of original *Nagakeshara* for this study to compare its efficacy in the internal haemorrhoid.

AIM AND OBJECTIVES

Aim

"Comparative study of *Nagakeshara* (*Mesuaferrea* Linn.) and it's a substitute, *Surapunnaga* (*Ochrocarpuslongifolius* Benth. and Hook) in management of internal haemorrhoid".

Objectives:

- To identify and authenticate the sample of *Nagakeshara* (*Mesuaferrea* Linn.) and *Surapunnaga*. (*Ochrocarpuslongifolius* Benth. and Hook)
- To study the comparative efficacy of powder stamens of *Mesuaferrea* and buds powder of *Ochrocarpuslongifolius* in the management of internal haemorrhoid.

Material and methods

Collection of Plant

Field sample of stamens of *Mesuaferrea* was collected from Ernakulum, Kerala and buds of *Ochrocarpuslongifolius* collected from Bangalore, Karnataka.

Identification and authentication of Plant:

The raw drugs were identified trial on 60 subjects and authenticated from FRLHT, (Foundation of Revitalization of Local Health traditions) Bangalore (Figure 1 and 2).



Figure 1: Field sample of stamens of *Nagakeshara* and buds of *Surapunnaga*



Figure 2: Staman's powder of *Mesuaferrea* and Bud's powder of *Ochrocarpuslongifolius*

Study design

The single-blind randomized clinical study was carried out on patients selected from OPD and IPD of Shalyatanttra Dept. of MGACH and RC. And Approved by the ethical committee.

Inclusion criteria

- Diagnosed cases of internal haemorrhoid of I and II degree.
- Patients between 18 to 70 years age group of either sex.

Exclusion criteria

- Patients with any systemic illness. (HIV, HbsAg, T.B., D.M. etc.)
- Patients with associated diseases like fistula in ano, fissure in ano, prolapsed of anum or rectum, growths suggestive of malignancy, a perianal abscess.
- Patients with any anatomical deformity regarding rectum and anal canal.

- 4) Patients with a prolapsed haemorrhoid. (III and IV Degree)
- 5) Pregnant and lactating women.
- 6) Patients with bleeding disorders.

Interventions

Sixty (60) clinically diagnosed patients of internal haemorrhoid were selected. Patients were equally and randomly divided by simple random sampling method into two groups. 30 patients were enrolled in each group.

Drug and Doses

Group A

1. *Nagakeshara* stamens powder: 1 gm once a day with navneetandmishri (*Khandsharkara*) before a meal.
2. *Haritakichurna*: 5-10 gm at night with lukewarm water as per *kostha* of patients.
3. Hot sitz bath once in a day.

Group B

1. Buds powder of *Surapunnaga*: 1 gm once a day with navneetandmishri (*Khandsharkara*) before a meal.
2. *Haritakichurna* 5-10 gm at night with lukewarm water as per *kostha* of patients.
3. Hot sitz bath once in a day.

Treatment was continued for 15 days to both groups.

Follow up

7th and 15th days during treatment and 30th and 60th days after completion of treatment.

Investigation

1. CBC, 2.HIV, 3.HbsAg, 4.BT-CT and 5. Blood Sugar.

Withdrawal Criteria

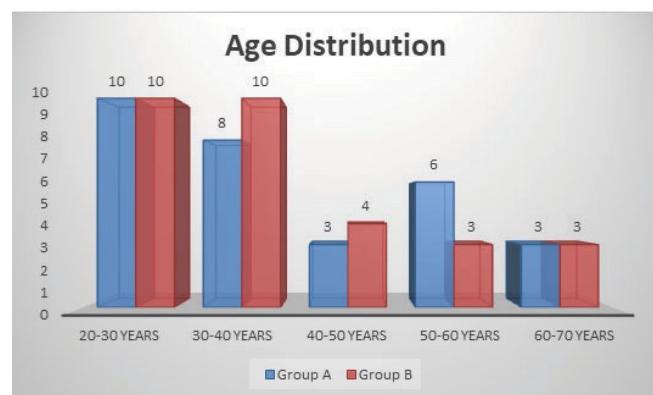
Total 70 patients were enrolled in a study out of that 07 patients did not come for regular follow up and 03 patients were not willing for investigation.

OBSERVATION AND RESULTS

We have distributed the patient age, gender, occupation, diet, constipation, *prakurti*, PR bleeding, pain and itching wise and compare between the experimental and control group shown in table 1 -17 and graph 10.

Table 1: Age-wise distribution of patients

| Age Group | Group A | Group B | Total | Percentage |
|-------------|---------|---------|-------|------------|
| 20-30 Years | 10 | 10 | 20 | 33.3 |
| 30-40 Years | 8 | 10 | 18 | 30.0 |
| 40-50 Years | 3 | 4 | 7 | 11.7 |
| 50-60 Years | 6 | 3 | 9 | 15.0 |
| 60-70 Years | 3 | 3 | 6 | 10.0 |
| Total | 30 | 30 | 60 | 100.0 |

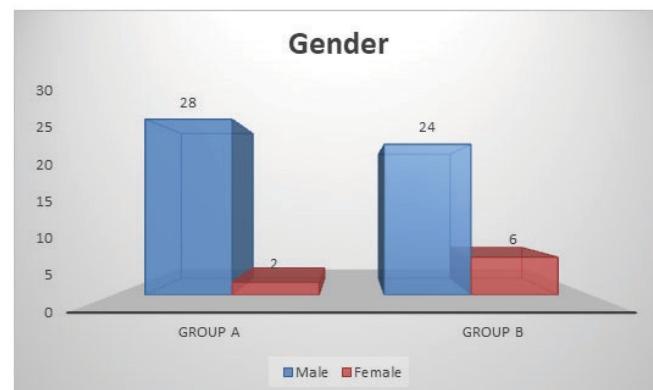


Graph 1: Age-wise distribution of patients.

We have recorded the maximum number of patients in 20-30 years of age group

Table 2: Gender wise distribution of patients

| Gender | Group A | Group B | Total | Percentage |
|--------|---------|---------|-------|------------|
| Male | 28 | 24 | 52 | 86.7 |
| Female | 2 | 6 | 8 | 13.3 |
| TOTAL | 30 | 30 | 60 | 100.0 |

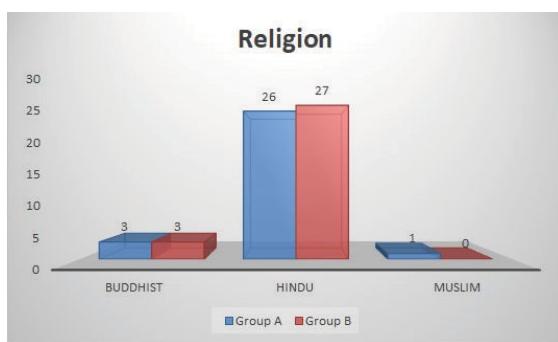


Graph 2: Gender wise distribution of patients

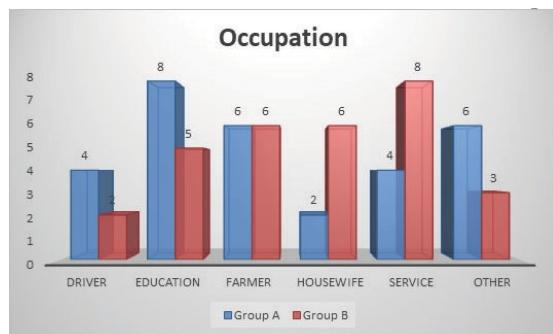
The maximum number of patients i.e. 86.7 % was found in the male gender

Table 3: Religion wise distribution of patients

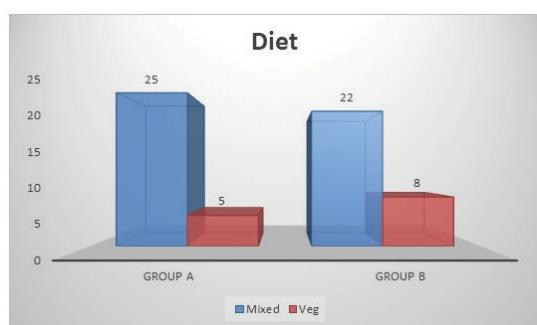
| Religion | Group A | Group B | Total | Percentage |
|----------|---------|---------|-------|------------|
| Buddhist | 3 | 3 | 6 | 10.0 |
| Hindu | 26 | 27 | 53 | 88.3 |
| Muslim | 1 | 0 | 1 | 1.7 |
| TOTAL | 30 | 30 | 60 | 100.0 |

**Graph 3:** Religion wise distribution of patients.**Table 4: Occupation wise distribution of patients:**

| Occupation | Group A | Group B | Total | Percentage |
|------------|---------|---------|-------|------------|
| Driver | 4 | 2 | 6 | 10.0 |
| Education | 8 | 5 | 13 | 21.7 |
| Farmer | 6 | 6 | 12 | 20.0 |
| Housewife | 2 | 6 | 8 | 13.3 |
| Service | 4 | 8 | 12 | 20.0 |
| Other | 6 | 3 | 9 | 15.0 |
| TOTAL | 30 | 30 | 60 | 100.0 |

**Graph 4:** Occupation wise distribution of patients.**Table 5: Diet wise distribution of patients**

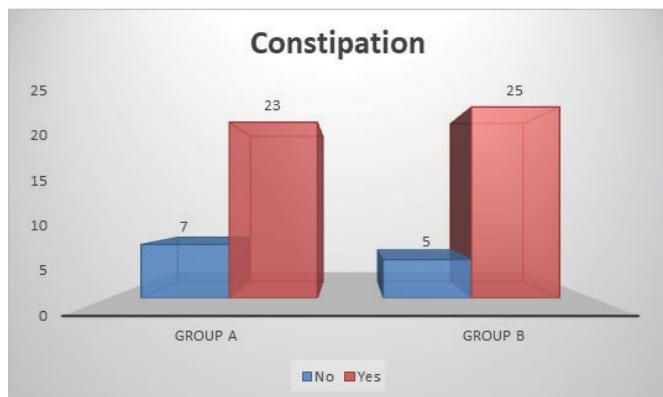
| Diet | Group A | Group B | Total | Percentage |
|-------|---------|---------|-------|------------|
| Mixed | 25 | 22 | 47 | 78.3 |
| Veg | 5 | 8 | 13 | 21.7 |
| TOTAL | 30 | 30 | 60 | 100.0 |

**Graph 5:** Diet wise distribution of patients.

We have found 78.3 % patients in mixed diet as compared to veg and non-veg diet.

Table 6: Constipation wise distribution of patients

| Constipation | Group A | Group B | Total | Percentage |
|--------------|---------|---------|-------|------------|
| No | 7 | 5 | 12 | 20.0 |
| Yes | 23 | 25 | 48 | 80.0 |
| TOTAL | 30 | 30 | 60 | 100.0 |

**Graph 6:** Constipation wise distribution of patients.**Table 7: Prakruti wise distribution of patients:**

| Prakruti | Group A | Group B | Total | Percentage |
|----------|---------|---------|-------|------------|
| KP | 2 | 1 | 3 | 5.0 |
| KV | 2 | 1 | 3 | 5.0 |
| PK | 10 | 10 | 20 | 33.3 |
| PV | 6 | 6 | 12 | 20.0 |
| VK | 4 | 5 | 9 | 15.0 |
| VP | 6 | 7 | 13 | 21.7 |
| TOTAL | 30 | 30 | 60 | 100.0 |

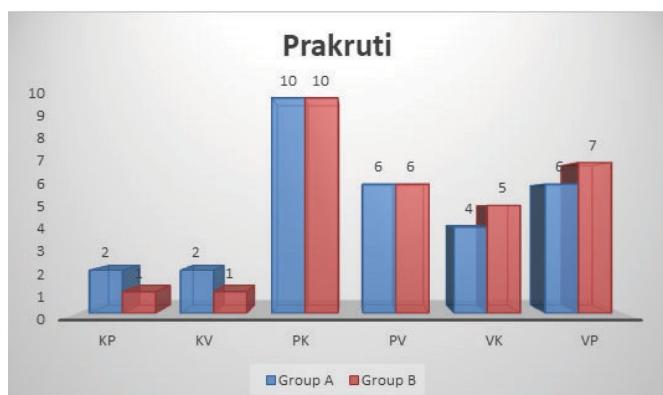
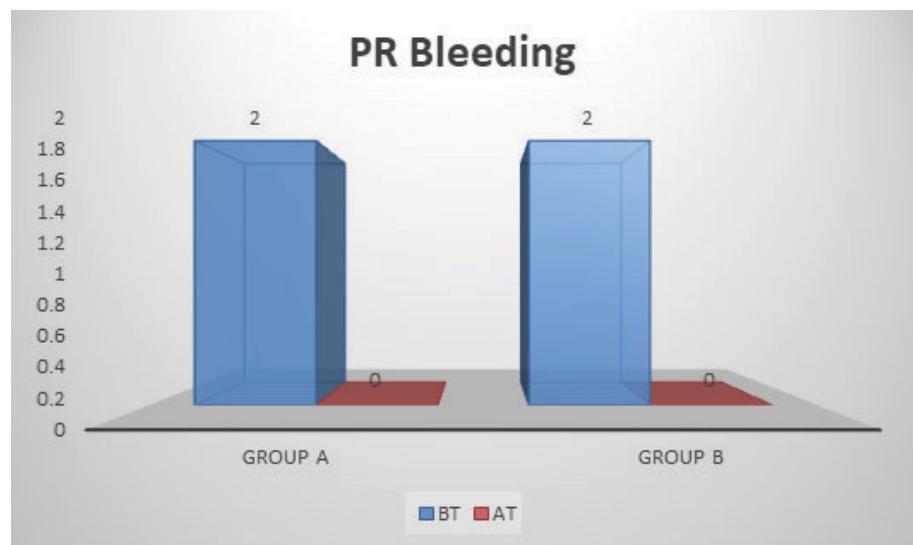
**Graph 7:** Prakruti wise distribution of patients.

Table 8: PR Bleeding wise distribution of patients

| PR Bleeding | Median | | Wilcoxon Signed Rank W | P-Value | % Effect | Result |
|-------------|--------|----|------------------------|---------|----------|-------------|
| | BT | AT | | | | |
| Group A | 2 | 0 | -5.063 ^a | 0.000 | 100.0 | Significant |
| Group B | 2 | 0 | -5.007 ^a | 0.000 | 86.4 | Significant |

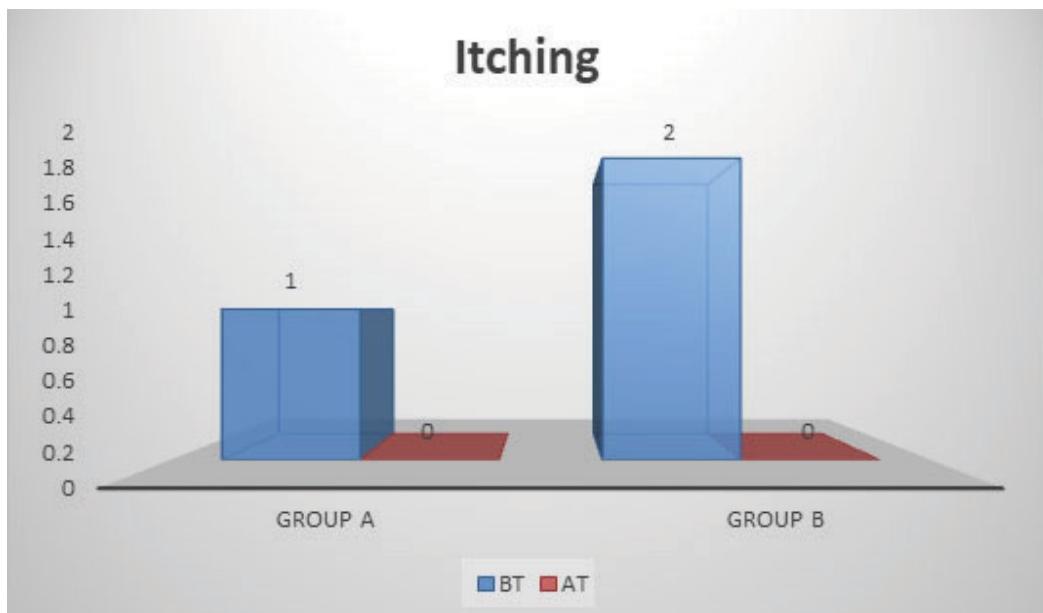
**Graph 8:** PR Bleeding wise distribution of patients.**Table 9: Pain wise distribution of patients**

| Pain | Median | | Wilcoxon Signed Rank W | P-Value | % Effect | Result |
|---------|--------|----|------------------------|---------|----------|-------------|
| | BT | AT | | | | |
| Group A | 2 | 0 | -4.940 ^a | 0.000 | 100.0 | Significant |
| Group B | 2 | 0 | -4.940 ^a | 0.000 | 89.3 | Significant |

**Graph 9:** Pain wise distribution of patients.

Table 10: Itching wise distribution of patients

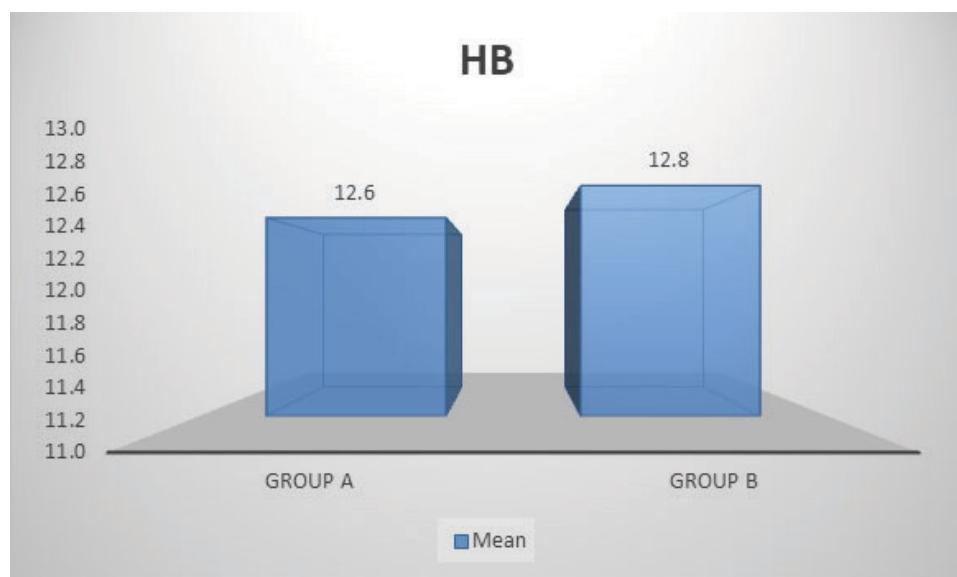
| Itching | Median | | Wilcoxon Signed Rank W | P-Value | % Effect | Result |
|---------|--------|----|------------------------|---------|----------|-------------|
| | BT | AT | | | | |
| Group A | 1 | 0 | -4.696 ^a | 0.000 | 97.4 | Significant |
| Group B | 2 | 0 | -4.964 ^a | 0.000 | 96.1 | Significant |

**Graph 10:** Itching wise distribution of patients.**Table 11:** Comparison between Group A and Group B regarding PR Bleeding, Pain and Itching

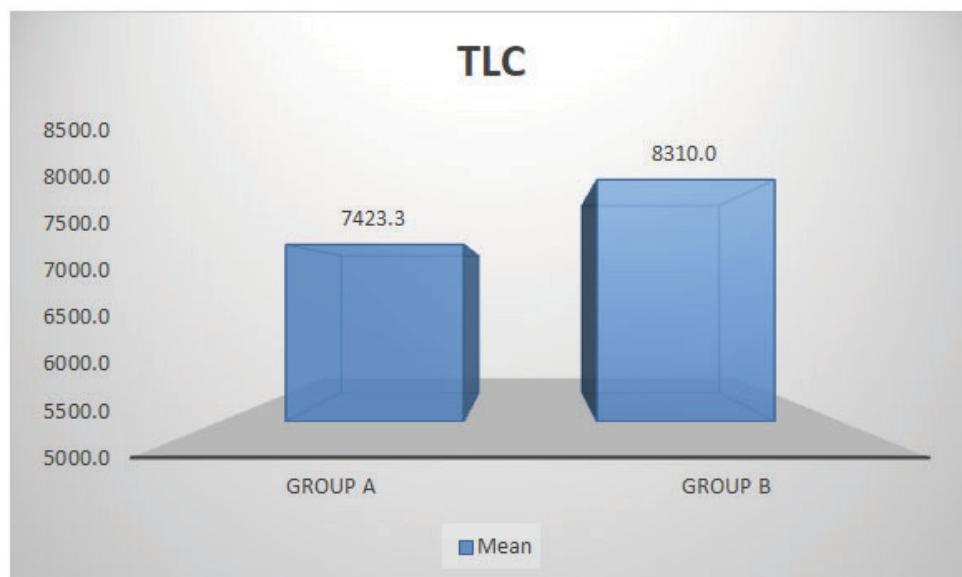
| | Group | N | Mean Rank | Sum of Ranks | Mann-Whitney U | P-Value |
|-------------|---------|----|-----------|--------------|----------------|---------|
| PR Bleeding | Group A | 30 | 34.05 | 1021.50 | | |
| | Group B | 30 | 26.95 | 808.50 | 343.500 | 0.089 |
| | Total | 60 | | | | |
| Pain | Group A | 30 | 30.50 | 915.00 | | |
| | Group B | 30 | 30.50 | 915.00 | 450.000 | 1.000 |
| | Total | 60 | | | | |
| Itching | Group A | 30 | 25.95 | 778.50 | | |
| | Group B | 30 | 35.05 | 1051.50 | 313.500 | 0.065 |
| | Total | 60 | | | | |

Table 12: HB wise distribution of patients

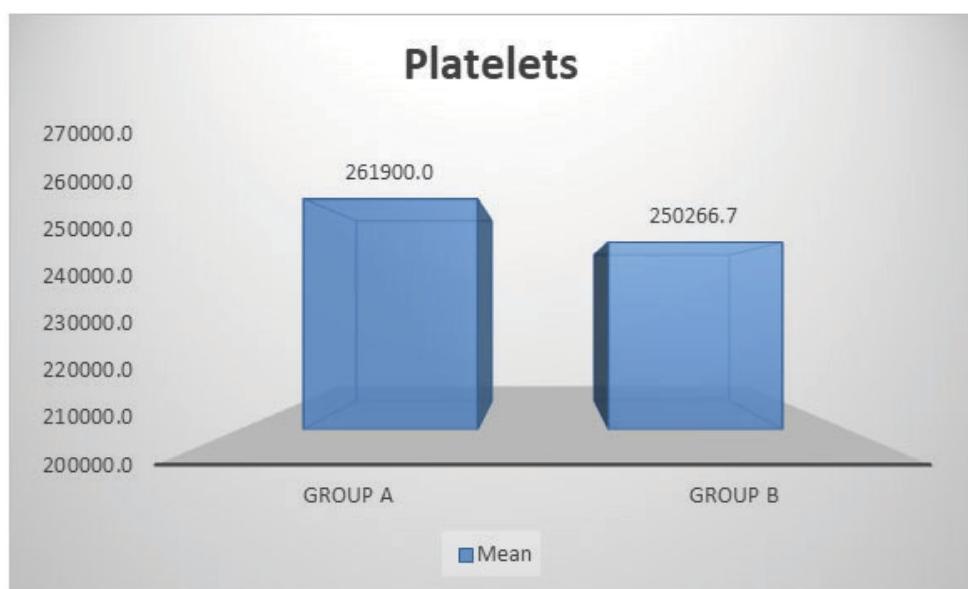
| Hb | N | Mean | SD | SE | t-Value | P-Value |
|---------|----|------|-----|-----|---------|---------|
| Group A | 30 | 12.6 | 1.2 | 0.2 | | |
| Group B | 30 | 12.8 | 1.7 | 0.3 | -0.670 | 0.505 |

**Graph 11:** HB wise distribution of patients.**Table 13:** TLC wise distribution of patients

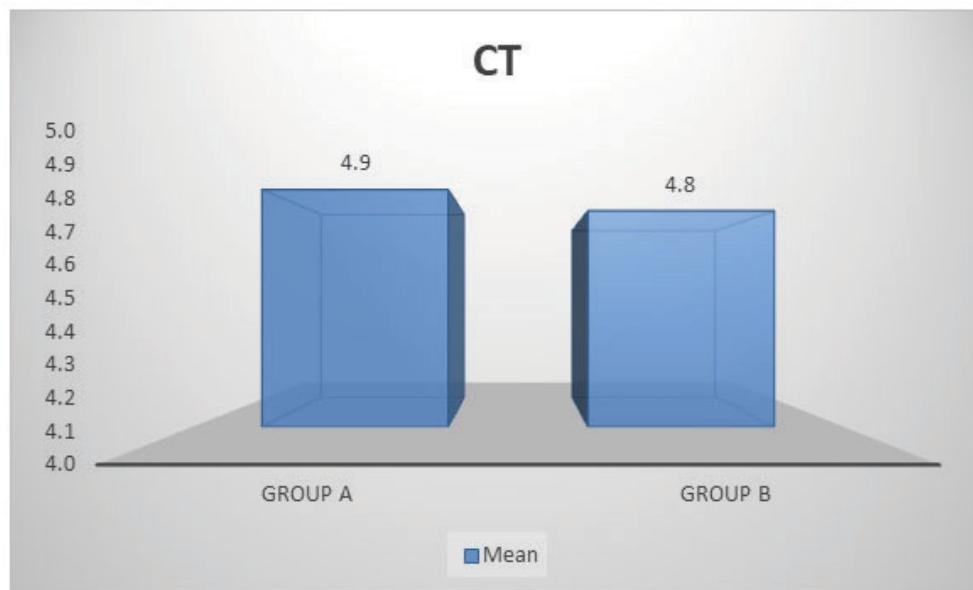
| TLC | N | Mean | SD | SE | t-Value | P-Value |
|---------|----|--------|--------|-------|---------|---------|
| Group A | 30 | 7423.3 | 1777.2 | 324.5 | -2.216 | 0.060 |
| Group B | 30 | 8310.0 | 1281.8 | 234.0 | | |

**Graph 12:** TLC wise distribution of patients.**Table 14:** Platelets wise distribution of patients

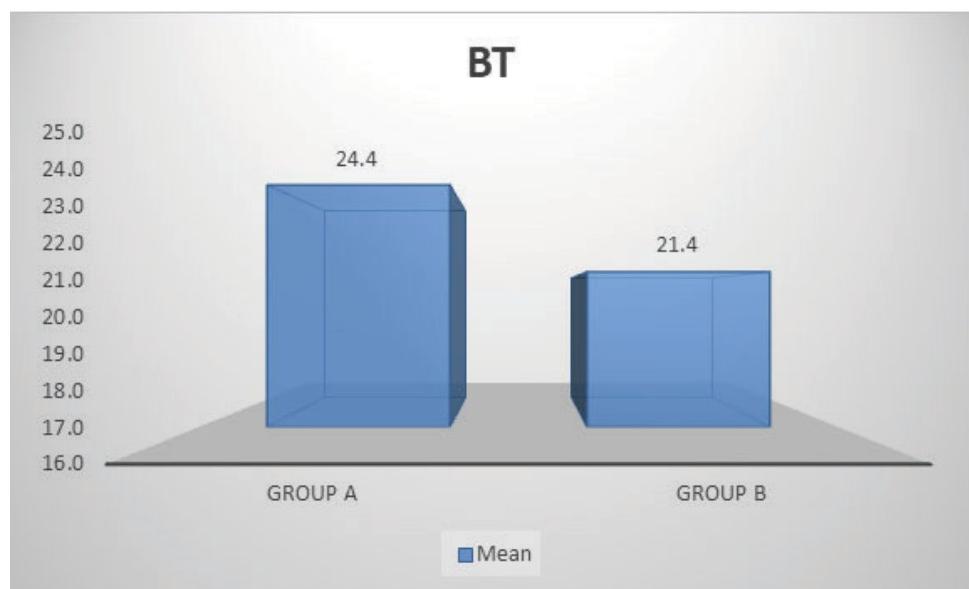
| Platelets | N | Mean | SD | SE | t-Value | P-Value |
|-----------|----|----------|---------|---------|---------|---------|
| Group A | 30 | 261900.0 | 56660.7 | 10344.8 | 0.767 | 0.446 |
| Group B | 30 | 250266.7 | 60793.0 | 11099.2 | | |

**Graph 13:** Platelets wise distribution of patients.**Table 15:** CT wise distribution of patients

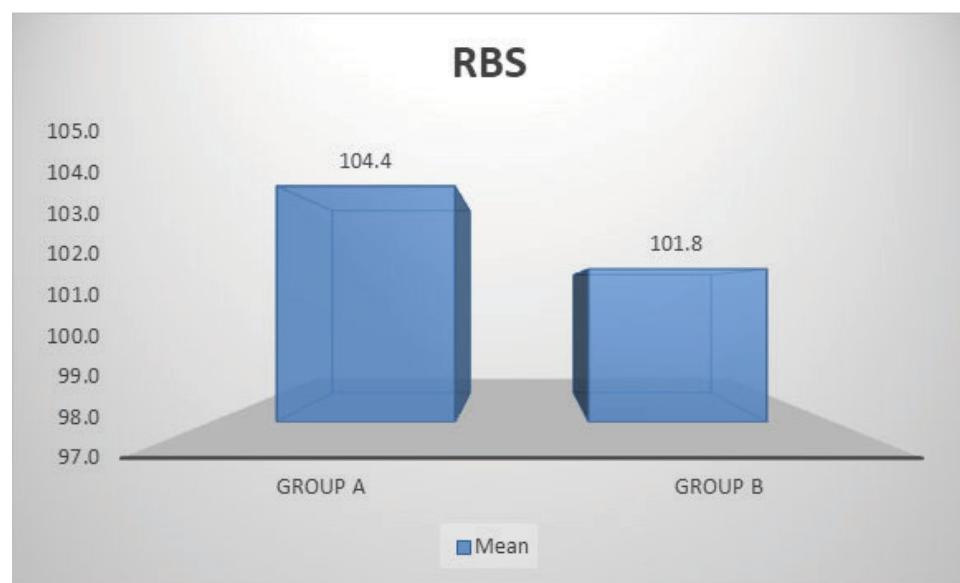
| CT | N | Mean | SD | SE | t-Value | P-Value |
|---------|----|------|-----|-----|---------|---------|
| Group A | 30 | 4.9 | 1.0 | 0.2 | | |
| Group B | 30 | 4.8 | 0.8 | 0.2 | 0.336 | 0.738 |

**Graph 14:** CT wise distribution of patients.**Table 16:** BT wise distribution of patients

| BT | N | Mean | SD | SE | t-Value | P-Value |
|---------|----|------|------|-----|---------|---------|
| Group A | 30 | 24.4 | 27.2 | 5.0 | 0.433 | 0.667 |
| Group B | 30 | 21.4 | 27.0 | 4.9 | | |

**Graph 15:** BT wise distribution of patients.**Table 17:** RBS wise distribution of patients

| RBS | N | Mean | SD | SE | t-Value | P-Value |
|---------|----|-------|------|-----|---------|---------|
| Group A | 30 | 104.4 | 17.5 | 3.2 | | |
| Group B | 30 | 101.8 | 21.1 | 3.9 | 0.519 | 0.606 |

**Graph 16:** RBS wise distribution of patients.

In this study we have observed that 33.3%, 86.7%, 21.7%, 78.3%, 80%, and 33.3% patients of 20-30 age group, male gender, taking education, mixed vegetarian, constipated and *pitta; kapha prakruti* respectively. Also, we have observed significant relief in per rectal bleeding, pain and itching in the experimental group as compared to the control group.

DISCUSSION

Nagakeshara is an important drug from a therapeutic point of view. After various field and market survey, the sample collected under the name of *Nagakeshara* sold from Ernakulam was having similar appearance i.e. stamens with golden yellow colour identified as *Mesuaferrea* (*Nagakeshara*) and

reddish-brown floral buds collected from Bangalore was identified as *Ochrocarpus longifolius* i.e. *Surapunnaga* and selected for study.⁸

In this study maximum patients of internal haemorrhoid are in the age between 20-40 years, more in male as compared to female, more in low and middle socioeconomic status, rate of prevalence is more in businessman, prolong sitting jobs and sanitary works, prolong use of hot and spicy diet, more in non-vegetarian than vegetarian, maximum cases in this study belonged to the rural area compared to urban. In a group treated by powder stems of *M. ferrea* (*Nagakeshara*) the relief was observed in minimum 4 days and maximum in 9 days. In a group treated by powder buds of *O. longifolius* (*Surapunnaga*) the relief was observed minimum in 7 days and maximum in 16 days. In the group treated by powder stamens of *M. ferrea* (*Nagakeshara*) the symptoms like bleeding per rectum, pain during and after defecation and itching, relief of these complaints regarding internal haemorrhoid was observed earlier than the group treated by powder buds of *O*.¹²

Longifolius (*Surapunnaga*) Fresh cases (non-operated) were more in number than previously operated cases. Pain, bleeding per rectum and itching were significantly reduced. It is observed that powder of stamens of *Nagakeshara* having more effective than powder of buds of *Surapunnaga*.

CONCLUSION

After critical review about *Nagakeshara* (*Mesuferrea*), it was found that it is abundantly available in particular regions of India but due to unawareness of its medicinal properties, it is not conserved, propagated and collected by society. That is the main reason which is not available in large quantities in the herbal market and collection of stamens of *M. ferrea* which is a tedious job for collectors which lead to its high cost.

Powder of stamens of *Nagakeshara* (*M. ferrea*) with proper *anupana*(vehicle) having more effective than powder buds of *Surapunnaga* (*O longifolius*) in bleeding piles.

It is concluded that although stamens of *M. ferrea* is costly than buds of *O. longifolia*, we must always prefer genuine drug instead of substitute unless and until non-availability of the genuine drug.

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